

We claim:

1. An inking and dampening system for a printing press having a rotating plate cylinder carrying at least one printing plate, comprising:

a form roller rotationally contacting the plate cylinder for applying ink to the at least one printing plate;

a clean-up roller rotationally contacting the plate cylinder for removing residual ink from non-image areas of the at least one printing plate after ink has been applied to the printing plate by the form roller;

an applicator roller system for providing ink to the form roller;

an ink subtractive roller system for removing ink from the form roller after printing; and

a dampening roller rotationally contacting the form roller for applying dampening fluid to the form roller.

2. The inking and dampening system of claim 1 wherein a variable speed controller controls the speed of an applicator roller of the applicator roller system.

3. The inking and dampening system of claim 1 wherein a variable speed controller controls the speed of a subtractive roller of the subtractive roller system.

4. The inking and dampening system of claim 1 wherein one of the applicator and subtractive roller systems includes a transfer roller in direct contact with the form roller.

5. The inking and dampening system of claim 1 wherein the dampening roller is hydrophilic.

6. The inking and dampening system of claim 1 wherein the printing press is a newspaper printing press employing blanket cylinders to print on both sides of a high speed continuous web.

7. The inking and dampening system of claim 1 wherein ink and dampening fluid are removed from the form roller by the subtractive roller system and wherein said removed ink and dampening fluid are recirculated to the applicator roller system.

8. The inking and dampening system of claim 1 wherein the dampening roller is a hydrophilic chrome transfer roller and further comprising a metering roller in rotational contact with the hydrophilic chrome roller for metering dampening fluid to the hydrophilic chrome roller.

9. The inking and dampening system of claim 1 further comprising a vibrator roller which rotationally contacts the clean-up roller and the form roller and acts as a bridge roller therebetween.

10. The ink and dampening system of claim 1 in which the applicator roller system includes a vibrating roller located generally below the form roller which contacts the surface of the form roller at a location between the subtractive roller and the dampening roller.

11. The inking and dampening system of claim 1 in which the subtractive roller system removes an emulsion of ink and water from the form roller.

12. The inking and dampening system of claim 1 wherein the dampening roller supplies additional dampening fluid to the form roller in an amount which an ink/dampening fluid film on the form roller can accept without forming a layer of excess water on the film.

13. The inking and dampening system of claim 1 wherein the ink subtractive system comprises:

a hard surfaced subtractive roller driven by a variable speed drive, which subtractive roller receives excess ink and dampening fluid from the form roller; and

a scraper blade adjacent the subtractive roller for scraping excess ink and dampening from the subtractive roller.

14. A method for inking and dampening one or more printing plates on a rotating plate cylinder comprising:

supplying ink to a form roller with an applicator roller system in contact with the form roller;

supplying dampening fluid to the form roller with a dampening roller system in contact with the form roller;

transferring an ink and dampening solution to the rotating printing plate at a nip between the form roller and the printing plate; and

removing excess ink and dampening fluid from the form roller at a nip between the form roller and a subtractive roller system.

15. The method of claim 14 wherein the steps are performed during each rotation of the form roller in the order recited.

16. The method of claim 14 further comprising the step of removing residual ink from non-image areas of the printing plate with a clean-up roller in rotating contact with the printing plate.

17. The method of claim 14 wherein the speed of the applicator roller system is varied with respect to press speed.

18. The method of claim 14 wherein the speed of the subtractive roller system is varied with respect to press speed.

19. The method of claim 14 wherein the subtractive roller system collects an emulsion of ink and dampening fluid which is recirculated to the applicator roller system for reapplication to the form roller.

20. The method of claim 14 wherein an emulsion of ink and dampening fluid in excess of that applied to form roller by the dampening roller system is collected for reuse in the dampening system.

21. The method of claim 14 wherein the dampening roller system includes a hydrophilic roller in pressural contact with the form roller which

supplies additional dampening fluid in an amount which a film ink/dampening fluid film on the form roller can accept without forming a layer of excess water on the film.

22. The method of claim 21 wherein the dampening roller is a chrome roller.

23. A form roller inking and dampening system in which a resilient material covered form roller is sequentially rotationally contacted by

an application roller system including a roller for applying additional ink to the form roller;

a dampening roller system including a dampening roller for applying additional dampening fluid to the form roller;

a plate cylinder to which ink and dampening fluid are applied by the form roller; and

a subtractive roller system including a roller for removing ink and dampening fluid from the form roller.

24. The system of claim 23 further comprising a clean-up roller rotationally contacting the plate cylinder for removing residual ink from non-image areas of a printing plate.

25. The system of claim 24 further comprising a transfer roller between the clean-up roller and the form roller, which transfer roller forms a nip with the form roller between points of contact of the plate cylinder and the subtractive roller system

26. The system of claim 24 wherein a single form roller of similar diameter of the plate cylinder is employed.